

We claim:

1. A method of inducing a cytokine in a cell, the method comprising contacting the cell with an immunological regulator under conditions effective to induce a cytokine, wherein the immunological regulator is selected from the

5 group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7), LKPFPKLKVEVFPFP (SEQ ID NO:8), VVMEV (SEQ ID NO:9), SEQP (SEQ ID NO:10), DKE (SEQ

10 ID NO:11), FPPPK (SEQ ID NO:12), DSQPPV (SEQ ID NO:13), DPPPPQS (SEQ ID NO:14), SEEMP (SEQ ID NO:15), KYKLQPE (SEQ ID NO:16), VLPPNVG (SEQ ID NO:17), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), LQPEIMGVPKVKETMVPK (SEQ ID NO:21), HKEMPFPKYPVEPFTESQ (SEQ ID NO:22), SLTLTDVEKLHLPLPLVQ (SEQ ID NO:23), SWMHQPP (SEQ ID NO:24), QPLPPTVMFP (SEQ ID NO:25), PQSVLS (SEQ ID NO:26), LSQPKVLPVPQKAVPQORDMPIQ (SEQ ID NO:27), AFLLYQE (SEQ ID NO:28), RGPFPILV (SEQ ID NO:29), ATFNRYQDDHGEEILKSL (SEQ ID NO:30), FLLYQEPVLGPFVR (SEQ ID NO:32), LNF (SEQ ID NO:33), and

20 MHQPPQPLPPTVMFP (SEQ ID NO:34), an active analog thereof, and combinations thereof, with the proviso that the immunological regulator is not VESYVPLFP (SEQ ID NO:31).

2. The method of claim 1 wherein the cell is present in a cell culture, a

25 tissue, an organ, or an organism.

3. The method of claim 1 wherein the cell is a mammalian cell.

4. The method of claim 3 wherein the cell is a human cell.

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5. The method of claim 1 wherein the immunological regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD

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(SEQ ID NO:2), DQPPDVEKPDLPQPFQVQS (SEQ ID NO:3),
 LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPFV (SEQ ID NO:5),
 MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7),
 LKPFPKLKVEVFPEP (SEQ ID NO:8), VYPFTGPIPN (SEQ ID NO:18),
 5 SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20),
 HKEMPFPKYPVEPFTESQ (SEQ ID NO:22), and combinations thereof.

6. A method for modulating an immune response in a cell, the method
 comprising contacting the cell with an immunological regulator under
 10 conditions effective to induce a cytokine, wherein the immunological regulator
 is selected from the group of MQPPPLP (SEQ ID NO:1),
 LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPQPFQVQS
 (SEQ ID NO:3), LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPFV
 (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT
 15 (SEQ ID NO:7), LKPFPKLKVEVFPEP (SEQ ID NO:8), VVMEV (SEQ ID
 NO:9), SEQP (SEQ ID NO:10), DKE (SEQ ID NO:11), FPPPK (SEQ ID
 NO:12), DSQPPV (SEQ ID NO:13), DPPPQS (SEQ ID NO:14), SEEMP
 (SEQ ID NO:15), KYKIQPE (SEQ ID NO:16), VLPPNVG (SEQ ID NO:17),
 VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19),
 20 TQTPVVVPPF (SEQ ID NO:20), LQPEIMGVVKVETMVPK (SEQ ID
 NO:21), HKEMPFPKYPVEPFTESQ (SEQ ID NO:22),
 SLTLTDVEKLHLPLPLVQ (SEQ ID NO:23), SWMHQPP (SEQ ID NO:24),
 QPLPPTVMFP (SEQ ID NO:25), PQSVLS (SEQ ID NO:26),
 LSQPKVLPVPQKAVPQRDMPIQ (SEQ ID NO:27), AFLLYQE (SEQ ID
 25 NO:28), RGPFPILV (SEQ ID NO:29), ATFNRYQDDHGEEILKSL (SEQ ID
 NO:30), FLLYQEPVLGPVR (SEQ ID NO:32), LNF (SEQ ID NO:33), and
 MHQPPQPLPPTVMFP (SEQ ID NO:34), an active analog thereof, and
 combinations thereof, with the proviso that the immunological regulator is not
 VESYVPLFP (SEQ ID NO:31).

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7. The method of claim 6 wherein the cell is present in a cell culture, a
 tissue, an organ, or an organism.

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8. The method of claim 6 wherein the cell is a mammalian cell.

9. The method of claim 8 wherein the cell is a human cell.

5 10. The method of claim 6 wherein the immunological regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7),
10 LKPFPKLKVEVFPPF (SEQ ID NO:8), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), HKEMPFPKYVVEPFTESQ (SEQ ID NO:22), and combinations thereof.

11. A method for modulating an immune response in a patient, the method
15 comprising administering to the patient an immunological regulator under conditions effective to induce a cytokine, wherein the immunological regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7), LKPFPKLKVEVFPPF (SEQ ID NO:8), VVMEV (SEQ ID NO:9), SEQP (SEQ ID NO:10), DKE (SEQ ID NO:11), FPPPK (SEQ ID NO:12), DSQPPV (SEQ ID NO:13), DPPPPQS (SEQ ID NO:14), SEEMP (SEQ ID NO:15), KYKLOPE (SEQ ID NO:16), VLPPNVG (SEQ ID NO:17),
20 VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), LQPEIMGVVKVKETMVPK (SEQ ID NO:21), HKEMPFPKYVVEPFTESQ (SEQ ID NO:22), SLTLTDVEKLHLPLPLVQ (SEQ ID NO:23), SWMHQPP (SEQ ID NO:24), QPLPPTVMFP (SEQ ID NO:25), PQSVLS (SEQ ID NO:26),
25 LSQPKVLPVPQKAVPQORDMPIQ (SEQ ID NO:27), AFLLYQE (SEQ ID NO:28), RGPFPILV (SEQ ID NO:29), ATFNRYQDDHGEEILKSL (SEQ ID NO:30), FLLYQEPVLGPVR (SEQ ID NO:32), LNF (SEQ ID NO:33), and

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 MHQPPQPLPPTVMFP (SEQ ID NO:34), an active analog thereof, and combinations thereof, with the proviso that the immunological regulator is not VESYVPLFP (SEQ ID NO:31).

- 5 12. The method of claim 11 wherein the immunological regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DOPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7),
 10 LKPFPKLKVEVEPEP (SEQ ID NO:8), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), HKEMPFPKYPVEPFOTESQ (SEQ ID NO:22), and combinations thereof.
13. The method of claim 11 wherein the immunological regulator is
 15 administered as part of a dietary supplement.
14. The method of claim 11 wherein the immunological regulator is administered topically.
- 20 15. The method of claim 11 wherein the patient is an animal.
16. The method of claim 15 wherein the patient is a human.
17. The method of claim 11 wherein the immune response is a specific
 25 immune response.
18. The method of claim 11 wherein the immune response is a nonspecific immune response.
- 30 19. The method of claim 11 wherein the immune response is the interferon response or antibody production.

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20. A method for modulating blood cell proliferation, the method comprising contacting blood cells with a blood cell regulator selected from the group of colostrinin, a constituent peptide thereof, an analog thereof, and combinations thereof, under conditions effective to change the number of blood cells.
21. The method of claim 20 wherein the blood cells are present in a cell culture or an organism.
22. The method of claim 20 wherein the blood cells are mammalian cells.
23. The method of claim 22 wherein the blood cells are human cells.
24. The method of claim 22 wherein the blood cells are increased in number.
25. The method of claim 24 wherein the blood cells are differentiated.
26. The method of claim 22 wherein the blood cell regulator is a constituent peptide of colostrinin.
27. The method of claim 26 wherein the blood cell regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVNVNLP (SEQ ID NO:4), DLEMPVLPVEPFPPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7), LKPFPKLVVEVPFP (SEQ ID NO:8), VVMEV (SEQ ID NO:9), SEQP (SEQ ID NO:10), DKE (SEQ ID NO:11), FPPPK (SEQ ID NO:12), DSQPPV (SEQ ID NO:13), DPPPPQS (SEQ ID NO:14), SEEMP (SEQ ID NO:15), KYKLQPE (SEQ ID NO:16), VLPPNVG (SEQ ID NO:17), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), LQPEIMGVPAVKETMVPK (SEQ ID NO:21), HKEMPFPKYVVEPFOTESQ (SEQ ID NO:22), SLTLTDVEKLHLPLPLVQ (SEQ ID NO:23), SWMHQPP

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(SEQ ID NO:24), QPLPPTVMFP (SEQ ID NO:25), PQSVLS (SEQ ID NO:26), LSQPKVLPVPQKAVPQORDMPIQ (SEQ ID NO:27), AFLLYQE (SEQ ID NO:28), RGPFPILV (SEQ ID NO:29), ATFNRYQDDHGEEILKSL (SEQ ID NO:30), VESYVPLFP (SEQ ID NO:31), FLLYQEPVLGPVR (SEQ ID NO:32), LNF (SEQ ID NO:33), and MHQPPQPLPPTVMFP (SEQ ID NO:34), an active analog thereof, and combinations thereof.

28. The method of claim 27 wherein the blood cell regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPPV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7), LKPPFKLKVEVFPEP (SEQ ID NO:8), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), HKEMPFKYPVEPFOTESQ (SEQ ID NO:22), and combinations thereof.

29. A method for modulating blood cell proliferation in a patient, the method comprising administering to the patient a blood cell regulator selected from the group of colostrinin, a constituent peptide thereof, an analog thereof, and combinations thereof, under conditions effective to change the number of blood cells.

30. The method of claim 29 wherein the patient is a human.

31. The method of claim 29 wherein the blood cells are increased in number.

32. The method of claim 31 wherein the blood cells are differentiated.

33. The method of claim 29 wherein the blood cell regulator is a constituent peptide of colostrinin.

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34. The method of claim 33 wherein the blood cell regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7), LKPFPKLKVEVFPPF (SEQ ID NO:8), VVMEV (SEQ ID NO:9), SEQP (SEQ ID NO:10), DKE (SEQ ID NO:11), FPPPK (SEQ ID NO:12), DSQPPV (SEQ ID NO:13), DPPPPQS (SEQ ID NO:14), SEEMP (SEQ ID NO:15), KYKLQPE (SEQ ID NO:16), VLPPNVG (SEQ ID NO:17), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), LQPEIMGVPKVKETMVPK (SEQ ID NO:21), HKEMPFPKYPVEPFTESQ (SEQ ID NO:22), SLTLTDVEKLHLPLPLVQ (SEQ ID NO:23), SWMHQPP (SEQ ID NO:24), QPLPPTVMFP (SEQ ID NO:25), PQSVLS (SEQ ID NO:26), LSQPKVLPVPQKAVPQORDMPIQ (SEQ ID NO:27), AFLLYQE (SEQ ID NO:28), RGPFPILV (SEQ ID NO:29), ATFNRYQDDHGEEILKSL (SEQ ID NO:30), VESYVPLFP (SEQ ID NO:31), FLLYQEPVLGPVR (SEQ ID NO:32), LNF (SEQ ID NO:33), and MHQPPQPLPPTVMFP (SEQ ID NO:34), an active analog thereof, and combinations thereof.

35. The method of claim 34 wherein the blood cell regulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7), LKPFPKLKVEVFPEP (SEQ ID NO:8), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), HKEMPFPKYPVEPFTESQ (SEQ ID NO:22), and combinations thereof.

36. A cytokine-inducing composition comprising a pharmaceutical carrier and an active agent selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLPFQVQS (SEQ ID NO:3), LFFFLPVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPFV

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(SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT
 (SEQ ID NO:7), LKPFPKLKVEVFPPF (SEQ ID NO:8), VVMEV (SEQ ID
 NO:9), SEQP (SEQ ID NO:10), DKE (SEQ ID NO:11), FPPPK (SEQ ID
 NO:12), DSQPPV (SEQ ID NO:13), DPPPPQS (SEQ ID NO:14), SEEMP
 5 (SEQ ID NO:15), KYKLOPE (SEQ ID NO:16), VLPPNVG (SEQ ID NO:17),
 VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19),
 TQTPVVVPPF (SEQ ID NO:20), LQPEIMGVPKVKETMVPK (SEQ ID
 NO:21), HKEMPFPKVPVEPFTESQ (SEQ ID NO:22),
 SLTLTDVEKLHLFLPLVQ (SEQ ID NO:23), SWMHQPP (SEQ ID NO:24),
 10 QPLPPTVMFP (SEQ ID NO:25), PQSVLS (SEQ ID NO:26),
 LSQPKVLPVPQKAVPQRDMPIQ (SEQ ID NO:27), AFLLYQE (SEQ ID
 NO:28), RGPFPILV (SEQ ID NO:29), ATFNRYQDDHGEEILKSL (SEQ ID
 NO:30), FLLYQEPVLGPVR (SEQ ID NO:32), LNF (SEQ ID NO:33), and
 MHQPPQPLPPTVMFP (SEQ ID NO:34), an active analog thereof, and
 15 combinations thereof, with the proviso that the active agent is not VESYVPLFP
 (SEQ ID NO:31).

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